

### ***Bacillus licheniformis*, Strain Gibson 46 (NCIB 9375)**

#### **Catalog No. NR-2494**

(Derived from ATCC<sup>®</sup> 14580™)

#### **For research use only. Not for human use.**

#### **Contributor:**

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#### **Product Description:**

Bacteria Classification: *Bacillaceae*, *Bacillus*

Species: *Bacillus licheniformis*

Type Strain: Gibson 46 (NCIB 9375, DSM 13)

Original Source: Isolated by Dr. T. Gibson<sup>1,2</sup>

Comments: *Bacillus licheniformis* (*B. licheniformis*), strain Gibson 46 was deposited at ATCC<sup>®</sup> in 1962 by Dr. Ruth E. Gordon, Dr. Ruth E. Gordon, Institute of Microbiology, Rutgers University, New Brunswick, New Jersey. The complete genome of *B. licheniformis* ATCC<sup>®</sup> 14580™ has been sequenced (GenBank: CP000002 and AE017333).<sup>3,4</sup>

*B. licheniformis* is a Gram-positive, spore-forming, facultative anaerobe that is widely distributed as a saprophytic organism in the environment.<sup>3</sup> It is a common contaminant in raw milk and its spores are highly resistant to pasteurization treatments. In addition, *B. licheniformis* can cause a variety of infections in humans including meningitis. *B. licheniformis* is used to manufacture enzymes, antibiotics, and biochemicals.<sup>3</sup>

#### **Material Provided:**

Each vial contains approximately 0.5 mL of bacterial culture in Nutrient Broth supplemented with 20% glycerol.

Note: If homogeneity is required for your intended use, please colony-purify prior to initiating work.

#### **Packaging/Storage:**

NR-2494 was packaged aseptically in screw-capped plastic cryovials. The product is provided frozen and should be stored at -60°C or colder immediately upon arrival. For long-term storage, the vapor phase of a liquid nitrogen freezer is recommended. Freeze-thaw cycles should be avoided.

#### **Growth Conditions:**

Media:

Nutrient Broth

Nutrient Agar

Incubation:

Temperature: 37°C

Atmosphere: Aerobic

Propagation:

1. Keep vial frozen until ready for use; thaw slowly.
2. Transfer the entire thawed aliquot into a single tube of broth.
3. Use several drops of the suspension to inoculate an agar slant and/or plate.
4. Incubate the tubes and plate at 37°C for 24 hours.

#### **Citation:**

Acknowledgment for publications should read "The following reagent was obtained through the NIH Biodefense and Emerging Infections Research Resources Repository, NIAID, NIH: *Bacillus licheniformis*, Strain Gibson 46 (NCIB 9375), NR-2494."

#### **Biosafety Level: 2**

Appropriate safety procedures should always be used with this material. Laboratory safety is discussed in the following publication: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, and National Institutes of Health. Biosafety in Microbiological and Biomedical Laboratories. 5th ed. Washington, DC: U.S. Government Printing Office, 2007; see [www.cdc.gov/od/ohs/biosfty/bmb15/bmb15toc.htm](http://www.cdc.gov/od/ohs/biosfty/bmb15/bmb15toc.htm).

#### **Disclaimers:**

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### References:

1. Gibson, T. "The *Bacillus subtilis* Group in Relation to Industrial Products." Proc. Soc. Agr. Bacteriologists (1943): 13–15.
2. Gibson, T. "A Study of *Bacillus subtilis* and Related Organisms." J. Dairy Research 13 (1944): 248–260.
3. Rey, M. W., et al. "Complete Genome Sequence of the Industrial Bacterium *Bacillus licheniformis* and Comparisons with Closely Related *Bacillus* Species." Genome Biol. 5 (2004): R77.1–R77.12. PubMed: 15461803. GenBank: CP000002.
4. Veith, B., et al. "The Complete Genome Sequence of *Bacillus licheniformis* DSM13, an Organism with Great Industrial Potential." J. Mol. Microbiol. Biotechnol. 7 (2004): 204–211. PubMed: 15383718. GenBank: AE017333.
5. Perrodou, E., et al. "ICDS Database: Interrupted CoDing Sequences in Prokaryotic Genomes." Nucleic Acids Res. 34 (2006): D338–D343. PubMed: 16381882.
6. Xu, D. and J.-C. Côté. "Phylogenetic Relationships between *Bacillus* Species and Related Genera Inferred from Comparison of 3' End 16S rDNA and 5' End 16S–23S ITS Nucleotide Sequences." Int. J. Syst. Evol. Microbiol. 53 (2003): 695–704. PubMed: 12807189.
7. Mansour, M., et al. "Inhibition of *Bacillus licheniformis* Spore Growth in Milk by Nisin, Monolaurin, and pH Combinations." J. Appl. Microbiol. 86 (1999): 311–324. PubMed: 10063630.
8. Smith, N. R., T. Gibson, R. E. Gordon, and P. H. A. Sneath. "Type Cultures and Proposed Neotype Cultures of Some Species in the Genus *Bacillus*." J. Gen. Microbiol. 34 (1964): 269–272. PubMed: 14135533.

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